Energy crisis

Zambia's tale of blackouts and brownouts

Zambia's electricity sector is in serious disarray. Monumental mismanagement and political interference have prevented the entrance of private western investors. Now China and India are stepping in. They may keep the patient alive, but might not make him better.

by Rudolf ten Hoedt

Musonda Chibulu is in an unenviable position. He is responsible for the rehabilitation of Zambia's aging park of hydroelectric generators and distribution networks that are the property of state-owned Zesco, the former power monopoly, at a moment when the country cries foul because of blackouts and brownouts. Chibulu is director of the company's strategic Rehabilitation Programme. Much of the equipment is old, he says from his office in Zesco's headquarters in Lusaka, the country's capital city. 'You know, our technicians still come across paper-insulated cabling.'

Overdue maintenance is only one of the challenges Zesco is facing. The country desperately needs the completion of the long-awaited 150 to 180 megawatt capacity increase of the Kafue North Bank hydroelectric generator. It would hardly make any difference, but it's enough to cover the shortages in the next few months if demand remains the same. For the long term, there is an urgent need for major private investments in new energy plants. Zesco has political support but to attract new investors, the company will have to work hard to rid itself of its image of an inefficient and shadowy state Moloch. Replacement of electricity meters is a case in point. Zesco is frenetically installing meters because a third of its customers don't have one. These fortunate consumers pay a fixed amount – or they don't pay at all. 'Am I under pressure?' Mr. Chibulu asks and briefly averts his gaze. 'That is an understatement.'

Alarming incident

Brownouts and blackouts have been a common phenomenon in Zambia for the past ten years. However, in January of this year the country was hit by four blackouts in a row, which was alarming even for Zambia. Even the mines in the famous northern "copper belt" were affected by them. The authorities had to admit that this was a case of structural shortage. Since 2002, peak demand in Zambia has almost doubled to nearly 2000 MW. Zambia's peak capacity is 1680 MW: its actual capacity is 200 MW lower but the remainder is imported. The mines, with their enormous increase in energy consumption, underline Zambia's economic growth since 2001. However, Zambia has not been able to take adequate action to meet the rising demand. Zambia's Minister of Energy, Kenneth Konga, said during a debate with scornful members of parliament that the main reason for the sudden crisis was that 'Zambia has not invested in electricity generation for the past 40 years'.

Zambia is not alone. The entirety of Sub-Saharan Africa has been hit by serious power outages. Rationing and regular blackouts have been everyday events in Ghana, Uganda and Zimbabwe for the past few years. Tanzania urgently needs an extra 1,200 MW to ward off an economic crisis. Oil-rich Nigeria is on the verge of declaring a state of emergency over its electricity supply. The economic growth that everyone so desperately wanted for Africa has ruthlessly exposed the inadequate infrastructure. State monopolies have not done their homework and therefore outdated and neglected plants cannot cope with the growing demand. The limited distribution network shows large gaps. Without resolute action, 60% of the people in Sub-Saharan Africa will be without power in 2020. The World Bank refers to this as an 'energy crisis'.

The countries affect each other too. South African state monopoly Eskom earlier this

Electricity Substation, Zambia. Photo: Construction Photography/Corbis

year blocked the supply of electricity to the Southern African Power Pool, a regional network. With this move they dragged Zambia down with them.

In Zambia, Zesco owns a generating system and transmission network that passed its sell-by date a long time ago. The normal lifespan of a power station is 25 to 30 years. After that, maintenance costs are very high. Zesco's three main power stations are considerably older. They often have to be taken out of circulation for emergency repairs.

In 1998, Zesco started the Power Rehabilitation Programme with international financial help. The programme, which cost $210 million, was to provide for overdue maintenance and a limited capacity increase of 210 MW. As a condition of funding, the programme had to be completed by December 2002.

Six years after the closing date, the project is still not finished. Many are astounded by the delay. 'I do not understand how you can miss this one,' says Swedish diplomat Henrik Silby who keeps a close eye on the sector on behalf of his country. Only the repair of the relatively small power plant at Victoria Falls, originally built in 1936, has been completed. However, it does not generate any extra capacity. Supplementary capacity was supposed to have come from increasing the output of the newer power plants on the Kariba North Bank and in the Kafue Gorge. Neither of these operations have been completed. Once again, Zesco had hoped to get off scot-free but this time the problems have caught up with them.

'We underestimated the economic growth,' says Chibulu. However, that excuse is not enough to explain the massive failure by Zesco and the national energy policies. According to a study by the Scottish company IPA Energy Consulting, it is Zesco's monumental mismanagement that is responsible for the failure of the reforms. Personnel costs are disproportionately high. More than half the expenditure is used for salaries and fringe benefits such as housing costs. This is absurd for a sector that is capital-intensive. To make matters worse, productivity is low.

Low tariffs

Zesco feels that low tariffs are also responsible for their problems. 'These tariffs make proper maintenance impossible,' says Chibulu. Indeed, the tariffs are not cost effective and haven't been for years, with serious results. Investments have failed to materialise, which has caused shortages. It is Zesco's own fault, according to the Energy Regulation Board (ERB), which has to give permission for tariff hikes. 'Zesco should have applied for tariff hikes more than it did. Tariffs have eroded over time. But if they do not come, there is nothing we can do,' says Joseph Kapika, the advisor for ERB. In desperation, ERB itself commissioned a study into Zesco's cost structure in 2005. 'The results exceeded our worst fears,' says Kapika. 'The average tariff was 45 per cent too low. Residential electricity was cheapest.' Low prices for private consumers are a disguised energy subsidy and they are probably the result of political interference. But Zesco also sells electricity to mines below cost price, possibly for the reason of deterring potential private investors from entering the market.

Last year, Zesco finally asked ERB for permission for a substantial tariff hike. ERB, however, only partially consented to their request and demanded drastic reforms for Zesco. Metering all clients before 2010 and

containment of labour costs are just two of the conditions the ERB has set. The IMF supports the Regulation Board's stance. According to the IMF, there is no support for increasing electricity prices if it is used to finance Zesco's mismanagement and top-heavy payroll.

Private investors

Despite the mismanagement at Zesco, the government remains opposed to privatising the company. 'Zesco is not for sale,' declared Zambia's president Levy Mwanawasa in May 2008, shortly before suffering another brain haemorrhage. The result is a structural shortage of energy. Local papers print pages of lists of who will be affected by blackouts and at what time. The national consumption of diesel has increased by 30% in the last four months because of generators used by the general public and the mines.

So far private investors have not been willing to fill the gap in the market. Although Zesco officially lost its monopoly on electricity generation and distribution in 1995, political resistance, such as uncertainty about access to Zesco's distribution network, has prevented investors from stepping in. The small Lunsemfwa 40 MW hydro plant in Kabwe, north of the capital, Lusaka, is the only privately owned power plant in operation. South African company Eskom owns 51% of the plant and local shareholders control a smaller part. In addition, the Copperbelt Energy Corporation (CEC) operates its own high voltage network that supplies electricity to the mines in the north of Zambia.

Still, it is not impossible that the Zambian energy sector will see a rapid increase in private investors. 'In the face of existing shortages, things will move quickly now,' says Zambian energy consultant Andrew Kamanga. 'Economical reality will catch up. We have to live in the real world.'

A private concession has recently been issued for a 240 MW hydro power station in Kalungwishi in the north. The Zambian initiators are looking for investors. Following Kenya and Tanzania, Zambia is also about to break through the state monopoly on distribution. The small North Western Energy Corporation, supported by the Dutch development bank FMO, is trying to supply electricity to thousands of rural houses in a new mining area. 'Once we are off the ground, we can go and look elsewhere,' says Kamanga, who has a financial interest in the project.

The largest privately owned project in the pipeline is a 750 MW hydro power station downstream in the Kafue River. It is a CEC initiative and will cost $1.5 billion. 'The project is well advanced,' says Hanson Sindowe, executive chairman of CEC. Development banks of South Africa (DBSA), the Netherlands (FMO) and IFC, the private investment branch of IMF, are interested. 'Some equity funds are interested as well and will join in,' says Sindowe.

Wake up call

The acute crisis is a wake-up call for Zesco. But its future remains uncertain. 'Zesco is still a vertically integrated monopoly,' says Kamanga. 'That is the problem. Reforming Zesco is essential. Without reform, nothing will happen.' The IMF supports the unbundling of Zesco's generation, transmission and distribution as a bid to enhance the company's efficiency and encourage private sector investments in the energy sector. According to the IMF report, the only way to encourage private sector investments in electricity generation is to raise tariffs to cost recovery levels and 'guaranteed access to the transmission network'. 'The Energy Regulation Board has been working on open access rules that will allow consumers a choice,' says Kamanga. 'That should open the way for the private sector to step in. But these rules have not materialised yet.'

But now two investors, for whom reorganisation of the Zambian energy sector is not the primary motivation, are on Zesco's horizon. It looks as if China and India, who both want to expand their presence in Zambia, will give Zesco a helping hand. They are investing in two projects that have been moribund for years. The first one is expanding the existing hdyroplant on the North Bank of the large Kariba lake with two new generators. This is a $360 million project of which the Chinese Exim Bank reportedly wants to pay 85%. A condition is that the project will be carried out by Chinese contractor Sino Hydro Engineering. Zesco is still trying to find financing for the remaining 15%.

India is a major player in the second project. In May, at a time when heated discussions about the energy crisis were rocking President Levy Mwanawasa's government, India's ambassador delivered a welcome message. India will make $80 million in loans available to build a hydro power station on the dam of the Itezhi Tezhi reservoir in central Zambia. Indian conglomerate Tata has been after this project for a while. Tata is on the point of investing heavily in Zambia, such as in the steel industry and a car assembly plant. Itezhi Tezhi would add 120 MW at an estimated cost of $200 million.

Hanson Sindowe of the Copperbelt Energy Corporation has mixed feelings about China's and India's involvement. 'It is a good sign that governance in Zambia is good enough for foreign investors to step in. But the growing presence of Chinese and Indian government-backed investments could push the private sector even further away. Reform pressure on Zesco will be less if China and India get heavily involved.' ■

Zambia has not invested in electricity generation for the past 40 years

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